Feature Extraction from Multimodal Sources to Support the National Map

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The development of the National Map by the U.S. Geological Survey will require significant research in feature extraction, generalization, visualization, and product generation and delivery. This research investigates the problem of feature extraction from available image and map database sources to help establish a framework for implementation of the National Map. The research approach is to build a knowledge base of 20 specific features for inclusion in the National Map and develop a table of probabilities for extraction of those features from current image sources. The design uses databases of features coupled through rules, methods, procedures, and heuristics with image responses and map representation to develop a tool to support feature extraction through a combination of automatic and interactive techniques. The project incorporates results from two existing projects, one internal USGS project exploring feature structures and theory, and the second at the University of Georgia, supported by the National Imagery and Mapping Agency (NIMA), to examine feature extraction from multimodal sources for Littoral Warfare Database (LWD) construction. Expected products from this research include a knowledge base framework and implementation for supporting feature representation and extraction for the National Map and a specific knowledge base of 20 features with associated tables of extraction probabilities. The knowledge base will be expandable to include other features and image sources.